

micropyle, and, though very rarely indeed, the fertilized germ-corpusele may also branch in the embryo-sac. Hence the pollen-tube exerts a *fertilizing* influence, and does not, as I formerly assumed, directly produce the germ, for the first cell of the germ does *not* originate in its interior; on the contrary, its influence causes a granular protoplasmic mass existing in the embryo-sac before fertilization to produce that cell from which both the embryo and its suspensor proceed. Those filaments (*fertilization-filaments*), of which the apices of the germinal corpuscles consist, and which I always found destitute of any power of motion, are quite essential to the act of fertilization, but they do not appear to take any direct part in the formation of the first cell of the germ." (Pp. 11, 12.)

"As to these 'filaments' I cannot say anything at present; they occur in the situation of the 'coagula' which I have described and figured in my memoir, and Schacht's drawings are not very unlike what I have seen, except that I did not detect any filamentous structure; and moreover, I do not think they project freely from the embryo-sac, although I have described them as occupying the absolute summit and exhibiting a kind of notch between them.

I must not conclude this brief notice without offering my testimony to the value of Tulasne's recent researches on this subject*. Although he has missed the most essential point, his observations are of exceeding value as contributions to our knowledge of the history of the embryo-sac and the earlier stages of growth of embryos.

London, July 30th, 1856.

XX.—On *Edwardsia carnea*, a new British Zoophyte.

By PHILIP H. GOSSE, F.R.S.

[With a Plate.]

Sp. Char. Mouth conical; tentacles above twenty-four, in three rows; epidermis subpolygonal, coriaceous, rough, brown; anterior column and posterior bulb pellucid, carneous, marked with white.

Description.—Length $\frac{5}{8}$ ths of an inch, of which the anterior column is $\frac{1}{8}$ th of an inch; diameter of body $\frac{1}{16}$ th; expanse of tentacles $\frac{1}{10}$ th of an inch.

Body enclosed in a tubular epidermis, from which the anterior and posterior extremities protrude at will (Pl. IX. fig. 1). This

* Ann. des Sc. Nat., Botanique, 4^{me} Sér. iv. p. 65.

epidermis is thick and coriaceous, roughened externally, the projections having a slight tendency to longitudinal arrangement, imparting a subpolygonal form to the body, which however is very indistinct: its colour is yellowish-brown, tinged in parts with rufous, and slightly translucent, so that the scarlet hue of the stomach shines through it, when the animal is contracted.

Anterior column cylindrical or slightly barrel-shaped; fluted; pellucid, almost colourless; each fluting defined by a slender white line, and marked with an oblong-linear spot of opaque cream-white near its base: stomach visible through the integuments like a thick scarlet axis.

Oral disk small; a star of cream-white rays on a translucent ground, surrounded by twenty-eight short, subfusiform, pointed, pellucid, carneous tentacles: mouth scarlet, on a low conical papilla. Tentacles slightly ringed with alternate bands of sub-opaque and pellucid carnation; they are arranged in three indistinct circles, those of the innermost circle thickest, graduating outwards.

Posterior extremity, when extruded, a somewhat inflated bladder, membranous, delicately pellucid, carneous, with the pale septa distinctly visible. The extremity is imperforate; it does not form a defined sucking-disk, but its surface is capable of adhering with considerable force to extraneous bodies (as a plate of glass for example), on pressure, thus forming a temporary disk. When this bulb is extruded, the epidermis is forced upward, and lies in great tucks or folds around the body, like a loose stocking (see fig. 4). At other times it is quite covered by the epidermis, which then appears continuous and imperforate (see fig. 3).

In the specimen described, the anterior column was attached to the epidermis, not at the extremity of the latter, but a little within its periphery, which, when the column was protruded, rose in irregular, overlapping, and somewhat everted points around its base (see figs. 2 & 3). In the process of contraction, the retiring column carried with it the epidermis, causing this to invert itself to a considerable extent. After a time, however (a week or more), I observed that the column, in retreating, ceased to invert the epidermis, simply descending into it as into a tube, the everted points of which remained exactly as they were when the animal was protruded. Hence I presume that there is no organic connexion between what is called the epidermis and the animal, but that the former is a cutaneous secretion thrown off, and inhabited as a tube; like the investiture of *Edwardsia vestita*.² In this case the attachment of the mouth of the tube to the column observed before, was probably a voluntary and temporary adhesion produced by the suctorial property of the

general surface; a property which we have seen to exist in all parts of the posterior bulb.

This pretty and interesting, though minute, Actinoid was found at Torquay in July by Miss Pinchard, an accomplished student of our marine natural history. This lady kindly forwarded it to me in its own native nidus,—an old *Saxicava's* burrow in the limestone rock, out of which its fore-parts projected (see fig. 2). Though removed from its burrow for the purpose of examination, it has lived several weeks in one of my small aquaria, expanding at intervals (somewhat charily), and frequently adhering to the glass by its posterior bulb.

EXPLANATION OF PLATE IX.

Fig. 1. *Edwardsia carnea*: natural size.

Fig. 2. *Ibid.* (magnified), in the act of protruding.

Fig. 3. *Ibid.* (magnified); the anterior column protruded and expanded.

Fig. 4. *Ibid.* (magnified); the posterior bulb protruded.

XXI.—Notes on the Freshwater Infusoria of the Island of Bombay.
No. 1. Organization. By H. J. CARTER, Esq., Assistant Surgeon H.C.S., Bombay.

[Concluded from p. 132.]

Nucleus.—By this term we shall understand, for the most part, an organ situated in the outer portion of the sarcode, which, when well marked, presents under the microscope the appearance of a full moon (to use a familiar simile), with similar slight cloudinesses (figs. 1 *d*, 2 *e*, 3 *d*). It is discoid in shape, of a faint yellow colour, and fixed to one side of a transparent capsule, which, being generally more or less large than the nucleus itself, causes the latter to appear as if surrounded by a narrow pellucid ring. In this state it is invariably present in *Amœba*, *Actinophrys*, *Spongilla*, *Astasia* (fig. 45 *b*), and *Euglena* (figs. 46 *a*, &c.), though difficult at first to recognise; particularly in the two latter families, where the pellucid space or capsule, at the bottom of which it is situated, is often the only visible sign of its presence. In *Diffugia proteiformis* it cannot of course be seen, from the thickly incrustated state of the test; but in a smaller and less incrustated species, which might be called *D. tricuspis* (from the trefoil-form of the opening of the test) (fig. 80), as well as in *Euglypha*, its position is posterior, and evident, from the largeness of the capsule, though the nucleus itself is so faint that even in *Euglypha* it can only occasionally be distinguished; while in *Arcella vulgaris* (Ehr.) it is constantly double and